

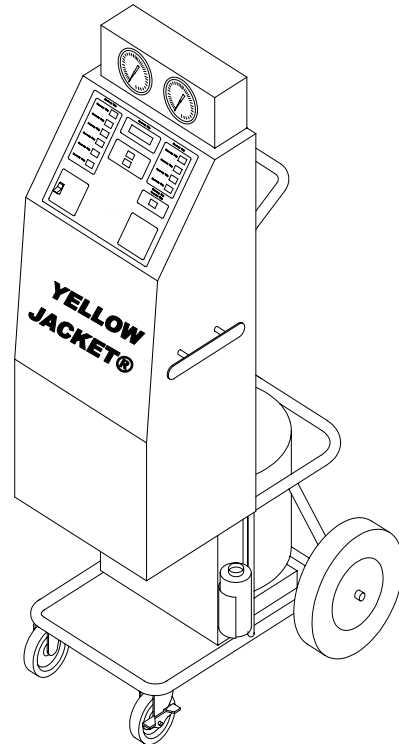
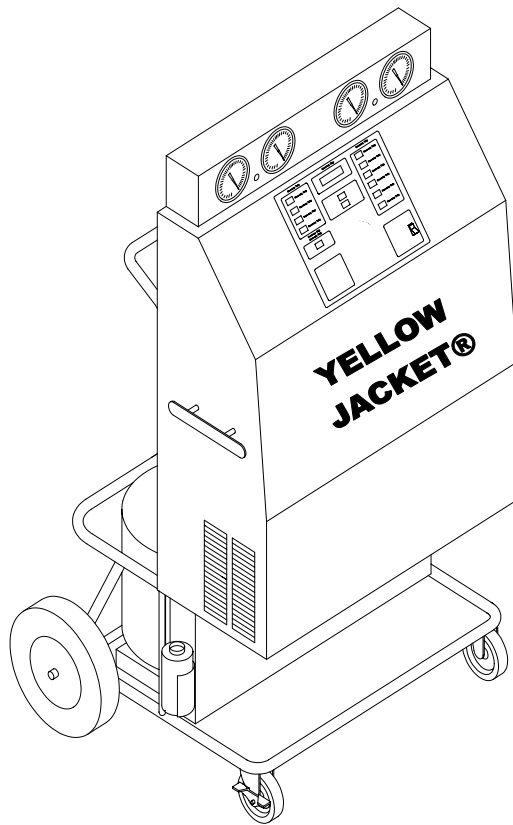
YELLOW JACKET®

700 & 800 Series

User's Manual

VERSION 4.1/15 SOFTWARE

Automatic Refrigerant Recovery/Recycling/ Recharging & Flushing System For Automotive Applications



Model 39750 for R12

Model 39770 for R134a

Model 39870 for both R12 & R134a

WARNING! CAUTION!

Inhalation of high concentration of refrigerant vapors is harmful and may cause heart irregularities, unconsciousness, or death. Deliberate inhalation of refrigerants is extremely dangerous. Death can occur without warning. Vapors reduce oxygen available for breathing and are heavier than air. Decomposition products are hazardous. Liquid contact can cause frostbite. All refrigerant containers, equipment, and hoses are under pressure.

Before operating this unit, please read this manual thoroughly. You must understand the procedures outlined in this manual. Failure to follow these procedures could void all warranties.

Before handling refrigerants, read the material safety data sheet (MSDS) from the refrigerant manufacturer.

Model 700 & 800 Series Refrigerant Management Systems

Specifications

Refrigerants:	Model 39750: R-12 Model 39770: R-134a Model 39870: R-12 and R-134a	
Compressor:	1/2 HP Oil-less	
Power Source:	120V AC 60Hz	
Amperage:	RLA: 9.3 FLA: 11.0 LRA: 30.0	
Size:	750/770 Unit 870 Unit	
Height:	53 in	53 in
Width:	22 in	35 in
Depth:	27 in	27 in
Weight:	126 lb. w/ Tank	232 lb. w/ Tank

Table of Contents

Section	Page	Section	Page
Specifications	1	MODE 6: Tank Refill	11
Safety Instructions	2	MODE 7: Refrigerant Management System	11
Component Diagram	3	Filter Maintenance	12
Control Panel Overview	4	Purging Non-Condensable Gases	12-13
Pre-Operation Check List	5	Utility Functions	13
MODE1: Recovery Only	5-6	Troubleshooting Information	14
MODE 2: Vacuum & Charge	6-7	Common Problems	15-16
MODE 3: Charge Only	7-8	LCD Error Messages	16
MODE 4: Full Cycle	8-9	Repair Parts List	17
MODE 5: Oil Flush	10	Warranty Information	17

General Safety Instructions

Know your equipment. Read and understand the operation manual and labels affixed to the unit. Learn it's application and limitations as well as the specific potential hazards of your equipment.

ALWAYS WEAR SAFETY GOGGLES.

Ground all equipment. This unit is equipped with an approved 3 prong grounding-type plug. The green ground wire should never be connected to a live terminal.

Use the Proper Extension Cords. Use the following guide for choosing the proper extension cord:

Wire Maximum Length

18 Ga. 10 feet
16 Ga. 25 feet
14 Ga. 50 feet
12 Ga. 100 feet

Avoid Dangerous Environments. Do not use this unit in damp locations or expose it to rain. This equipment should be used in a location with mechanical ventilation that provides at least 4 air changes per hour. This equipment should not be used near open containers of open flammable liquids.

Disconnect Unit from Power Supply Before Servicing. An electrical shock hazard is present when the unit is disassembled or the cowl is removed.

Repair Damaged Parts. Do not operate the unit with a defective part. Repair unit to proper operating conditions.

Use Recommended Accessories. Follow the instructions that accompany all accessories. Improper use of accessories may damage equipment or create a hazard.

Use Caution When Connecting or Disconnecting. Improper usage may result in refrigerant burns (frostbite). If a major refrigerant leak occurs, proceed immediately to a well ventilated area. The hoses included with this unit are supplied with ball valves that, when closed, prevent refrigerant vapors from venting when disconnecting from the automobile.

Only Use the Model 700 & 800 Series with the Correct Refrigerants. See the specifications for a list of compatible refrigerants.

Operate the Unit within the Design Environment. The Model 700 & 800 series was designed to operate in a temperature range from 40°F to 120°F. The unit should also not be operated in a wet location.

WARNING! Refrigerant, in liquid and vapor form, is a potentially hazardous material. Please consult the manufacturer's Material Safety Data Sheet for additional information and adhere to the following safety guidelines:

- Avoid breathing high concentrations of vapors.
- Use with sufficient ventilation to keep operator exposure below recommended limits, especially in enclosed and low lying areas.
- Avoid contact of liquid refrigerant with the eyes and prolonged skin exposure.
- Wear goggles and protective gloves.
- Do not attempt to operate this unit above 125°F ambient temperature.
- Do not allow refrigerants to contact open flame. Refrigerant decomposition in a flame results in phosgene gas. Breathing phosgene gas can be fatal.

FIRST AID: If high concentrations of refrigerant are inhaled, immediately remove the victim to fresh air. Call a physician or emergency medical technician. Keep calm. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Do not give epinephrine or similar drugs.

- **EYE:** In case of liquid contact, immediately flush eyes with plenty of water. Call a physician.
- **SKIN:** Flush with water. Treat for frostbite, if necessary, by gently warming the effected area.

CAUTION! All refrigerant hoses, recovery tanks, refrigerant lines, the Model 700 & 800, and other vessels containing refrigerants should be handled as if under high pressure.

Component Location and Description

1. Tool Box - Used to store the tank refill adapter for R-134a and other tools.
2. Filters - High capacity disposable filters comprised of 25 micron particulate filter and desiccant to remove moisture.
3. Tank Vapor Hose - Connects unit and the liquid port of the tank
4. Tank Liquid Hose - Connects unit and the vapor port of the tank
5. Moisture Indicator - Indicates the level of moisture in the system and when filter maintenance is needed.
6. Auxiliary Service Port - Extra port on the "T" fitting used for filter maintenance mode.
7. Storage Tank - 50 Lb. storage and recovery tank.
8. Printer Port and Circuit Breaker - Plug for printer cable and 15 amp circuit breaker.
9. Power Cord - 12 foot long with grounded plug to be connected to a grounded 100 volt AC power source.
10. Blue Low Side Automobile Service Hose - Long hose used to connect the unit to the low side of the automobile A/C system.
11. Red High Side Automobile Service Hose - Long hose used to connect the unit to the high side of the automobile A/C system.
12. Auxiliary Power Receptacle - Used to power an external vacuum pump or optional printer.
13. Low Pressure Gauge - Indicates the low side pressure of the automobile A/C system.
14. High Pressure Gauge - Indicates the high side pressure of the automobile A/C system.
15. Main Power Switch - Rocker switch to control power to the system.
16. Control Panel - LCD status display and selection buttons for easy, user-friendly operations.
17. Scale Platform - Sits under the tank and measures the weight of the tank. The scale is calibrated with the unit. If the scale or unit control panel are replaced, re-calibrate the scale using the unit's Utility Mode.
18. Oil Drain Bottle - Collects and measures the oil removed from the A/C system
19. Oil Pump - Pump for adding oil to A/C system.
20. Tank Refill Adapter - Adapter for filling R-134a storage tank.
21. Pre-filters (not shown) for inlet blue and red hose from machine to automobile.

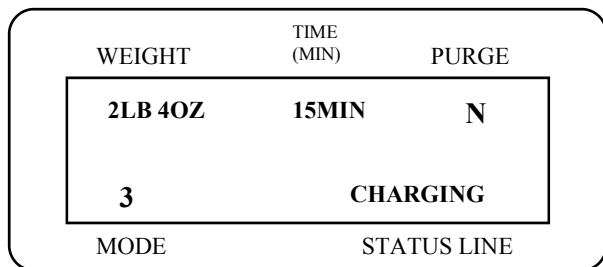
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Control Panel Features

LCD Display

The Liquid Crystal Diode (LCD) display provides the unit operator with continual updates of the Model 700 & 800's status. In addition, the display will prompt the technician for the user input needed to continue operation. Lastly, the LCD shows error codes for rapid diagnosis of abnormal conditions.

The display is divided into five fields which aid the technician in rapidly reading information.



1. **Weight** - Shows the weight of refrigerant being process in each mode.
2. **Time (MINS)** - Shows the time set for either Flush or Vacuum. Timer will count down to display the time left.
3. **Purge** - A "Y" in this field indicates non-condensable gases such as air are present in the storage tank. The unit will purge automatically next time the unit is turned on when the "Y" is displayed. An "N" indicates non-condensable gases are below the set limit. An "E" indicates the unit purged for thirty (30) seconds and non-condensable gases are still present. This is a safety feature which prevents excess purging when a malfunction occurs somewhere in the system. See the Purging Non-Condensable Gas section for further details.
4. **Mode** - Displays the Mode number of the current operation.
5. **Status Line** - Displays programming commands and informs the user of current status of the unit.

Mode Selection Keys

The Mode Selection Keys allow the technician to select a specific operation. Six Mode keys are located on the left side of the control panel. One key, the Refrigerant Management System Key, is located on the right side.

1. **MODE 1** -Recover Only, is used to recover and recycle refrigerant from an automobile A/C sys-

tem. This mode is most often used prior to opening an A/C system to atmosphere to replace a system component.

2. **MODE 2** -Vacuum & Charge, is used to Vacuum air from a system previously opened to atmosphere. This mode will then proceed to recharge the A/C system. This mode also allows the technician to verify the A/C system will hold a vacuum for a certain length of time.
3. **MODE 3** -Charge Only, adds refrigerant to an A/C system and is most commonly used to "top off" the system.
4. **MODE 4** -Full Cycle, performs a complete recovery, recycling, evacuating and charging of an automobile A/C system.
5. **MODE 5** -Oil Flush, removes oil and refrigerant from an A/C system.
6. **MODE 6** - Tank Refill, is used to add new refrigerant to the storage tank.
7. **MODE 7** -Refrigerant Management System, gives the technician access to information about units refrigerant use to date.

Function Keys

The Function Keys are used to enter data into the system in a variety of modes.

FUNCTION A - INCREASE. Press INCREASE to raise values on the display for user-input information. Holding the button depressed will increase the rate of change.

FUNCTION B - DECREASE. Press DECREASE to lower values on the display for user-input information. Holding the button depressed will increase the rate of change.

FUNCTION C. WEIGHT CONVERSION. Press WEIGHT CONVERSION to change the displayed units of weight. The choices are: pounds/ounces, pounds, ounces, and kilograms.

ENTER. Press ENTER to accept the value on the LCD after using the INCREASE or DECREASE keys.

Operation Keys

START. Press START to begin a selected operational mode.

RESET. Press RESET to cancel the current operation. The RESET may have to be pushed more than once to return to "Select Mode" screen.

Pre-Operation Check List

To ensure quick, successful integration of the Model 700 or 800 into your shop, please follow these set-up procedures before the first use of the unit. With the exception of step one, these steps should also be used each time you use the unit.

1. Check the oil drain bottle to ensure it is empty.
2. Check and open the valves on the storage tank. If the valve will not turn counter-clockwise and seems to be completely open, verify it is actually open by turning the valve clockwise one quarter turn.
3. Turn of the Main Power switch at the bottom left hand corner of the control panel.
4. Follow the directions of the LCD to perform a scale calibration.
5. The system will then perform a Clearing Routine. The LCD will read "SELECT MODE" when ready for service.
6. **(For the 39870 Dual Refrigerant System only)** Changing Refrigerant types- Switch the Refrigerant Selector Switch to the desired refrigerant (R12 or R134a). Confirm refrigerant selection by observing LED indicator on the unit. R12 will illuminate the LED on the left, and R134a will illuminate the LED on the right. While facing the rear of the unit hang both storage tanks on there respective cradles. Slide scale to the proper side and place the desired tank on the scale. The tanks are clearly marked by refrigerant type. Make sure that the tank is free and clear on all sides and the tanks movement is not impeded by any objects.

Mode 1– Recovery Only

The Recovery Only mode should be used to fully evacuate all refrigerant from an air conditioning system. For instance, if the system needs to be opened to atmosphere to replace a part, all refrigerant must be removed before opening the system.

MODE 1 Operational Steps

1. Refer to Pre-Operation Check List.
2. Connect the high and low side auto service hoses to the respective high and low side service ports on the automobile A/C system. Open the service hose valves.

NOTE: If desired, the gauges of the Model 700 & 800 can now be used to aid investigation of an A/C system problem. Ensure the automobile A/C system is turned off prior to selecting a mode on the Model 700 & 800.

3. Verify the automobile air conditioning system is off.
4. Press MODE 1 for recovery operations. The LCD should read "**Push Start.**"
5. Press START to begin recovery operations.

During the recovery operation, refrigerant is removed from both the high and low side of the automobile air conditioning system. The LCD will display the amount of refrigerant being recovered and the status line will read "**Recovering Refrigerant.**" The compressor will shut off automatically three to five minutes after

the automobile system reaches a vacuum of six inches of mercury (in Hg). The extra time is required by the US Environmental Protection Agency (EPA) to ensure all refrigerant is removed from the A/C system.

After the system turns off, the unit will beep to alert the technician the job is complete. The oil removed from the auto will drain into the oil drain bottle on the side of the unit. Because a small amount of gas will be released as the oil drains, a small hissing sound may come from the bottle.

6. Verify the message on the LCD reads "**Recovery Complete.**"
7. Press the RESET button. The LCD should read "**Check Oil Levels.**"
8. Shut the service valves and disconnect the high and low side auto service hoses from the automobile.
9. Measure the oil in the oil drain bottle. Dispose of recovered oil in a proper manner.
10. Use the high pressure oil pump and hose to add new oil back into the automobile A/C low side port in accordance with the automobile manufacturer's recommendations. Add an amount of new oil equal to the amount collected in the oil drain bottle. Each full stroke of the oil pump will add ½ ounce of oil.
11. Press the RESET button to return to the "**Select Mode**" status.

Error Messages in Recovery Mode

If an error condition arises during recovery operations, the unit will slowly beep and the LCD will display one of the following messages:

“ERR-Tank Full” - This message appears when the storage tank becomes 80% full. This occurs when the total tank weight exceeds 75 pounds. Press the ENTER button when the LCD reads **“Select Mode”** to see the total tank weight.

“ERR-Hi Pressure” - This message indicates a high

pressure condition in the system. During recovery operations, this will most likely occur because the liquid valve on the storage tank is closed. See the troubleshooting chart for more details.

“Time Limit” - During recovery operations, the system will shut down after the automobile A/C system reaches a proper vacuum. If a condition in the A/C system, such as a leak, prevents the system from reaching this vacuum level, the Model 700 & 800 will shut down after 45 minutes. This time is set at the factory but may be changed in the unit's Utility Mode.

Mode 2– Vacuum & Charge

The Vacuum & Charge function of the Model 700 & 800 is designed to remove moisture from the automobile A/C system by pulling a deep vacuum and charging the system with a precise amount of refrigerant. This mode is most often used after completing a repair which required opening the A/C system to the atmosphere. Moisture in an A/C system can cause erratic operation and must be removed before recharging the system with refrigerant.

MODE 2 Operational Steps

1. Refer to the Pre-Operation Check List.
2. Connect the high and low side auto service hoses to the respective high and low side service ports on the automobile A/C system. Open the service hose valves.

NOTE: If desired, the gauges of the Model 700 & 800 can now be used to aid investigation of an A/C system problem. Ensure the automobile A/C system is turned off prior to selecting a mode on the Model 700 & 800.

3. Verify the automobile air conditioning system is off.
4. Press MODE 2 for Vacuum & Charge.
5. When the LCD reads **“Set Vacuum Time,”** set the vacuum time by pressing and holding INCREASE or DECREASE until the desired time is shown. Release the button and press ENTER to accept the vacuum time shown on the LCD. Vacuum time can be bypassed if the time is set to zero.
6. When the LCD reads **“Set Vac Hold Time,”** set the vacuum hold time by pressing and holding INCREASE or DECREASE until the desired time is shown. Release the button and press ENTER to accept the vacuum hold time shown on the

LCD. Vacuum hold time can be bypassed if the time is set to zero.

7. When the LCD reads **“Set Charge Amount,”** set the amount of Refrigerant to be charged into the A/C system by pressing and holding INCREASE or DECREASE until the desired amount is shown. Release the button and press ENTER to accept the charge amount shown on the LCD.
8. The LCD should read **“Push Start.”**
9. Press START to begin vacuum and charging operations.
10. The Model 700 & 800 will begin to evacuate the A/C system and will beep to indicate the end of the vacuum time.
11. Record the vacuum level shown on the low pressure gauge and press START to begin the vacuum hold time. The hold time will count down on the LCD and the unit will beep at the end of the hold time. **If vacuum hold time was set to zero, the unit will transition into charge mode.**
12. Record the final vacuum level shown on the low pressure gauge. If the two recorded vacuum levels are different, the A/C system may have a leak and might not retain refrigerant when charged. The Model 700 & 800 will automatically start the charge cycle.

During the charge process, liquid refrigerant is drawn from the storage tank, vaporized in the Model 700 & 800, and charged into the high side of the automobile A/C system. The LCD will display the progress of the charging process. When the desired charge amount has been transferred to the A/C system, the unit will beep.

16. Verify the message on the LCD reads **“Vac &**

Chrg Complete.”

17. Press the RESET button. The LCD should read **“Check Oil Levels.”**
18. Shut the service valves and disconnect the high and low side auto service hoses from the automobile.
19. Measure the oil in the oil drain bottle. Dispose of recovered oil in a proper manner.
20. Use the high pressure oil pump and hose to add new oil back into the automobile A/C low side port in accordance with the automobile manufacturer's recommendations. Add an amount of new oil equal to the amount collected in the oil drain bottle. Each full stroke of the oil pump will add ½ ounce of oil.

Press the RESET button to return to the **“Select Mode”** status.

Error Messages in Vacuum & Charge Mode

If an error condition arises during Vacuum & Charge, the unit will slowly beep and the LCD will display one of the following messages:

“ERR-Tank Empty” - This message appears when the storage tank has less than six (6) pounds of refrigerant remaining. Press ENTER when the LCD reads **“Select Mode”** to see the total tank weight. Add refrigerant to the tank using the steps outlined in this manual.

“ERR-Hi Pressure” - This message indicates a high

pressure condition in the system. During charging operations, this will most likely occur because the valve on the high side auto service hose is shut or the schrader core in the auto service port is not fully depressed. See the troubleshooting chart for more details.

“Time Limit” - During charging operations, the system is designed to shut down after the automobile A/C system has been charged and the Model 700 & 800 has been pulled into a proper vacuum. If a condition prevents the system from completing the charge within a set time limit, the Model 700 & 800 will indicate an error. The most common cause of this error is a closed liquid tank valve which prevents the unit from drawing out any refrigerant. The time is set at the factory to ten (10) minutes and may be changed in the unit's Utility Mode.

“ERR - Accumulator Hi Pressure” - This error indicates an internal restriction or defective high pressure switch. It is most commonly used in diagnosing a problem with the Model 700 & 800.

“ERR - Accumulator Time Limit” - This error indicates a possible internal failure and is used in diagnosing a problem with the Model 700 & 800.

ERR - Possible Overcharge” - This error occurs if the amount charged exceeds the charge setting by more than four (4) ounces. The most likely cause of this error is disturbance of the storage tank. The error could also indicate a faulty solenoid valve.

Mode 3– Charge Only

The Charge Only function of the Model 700 & 800 is designed to add a precise amount of refrigerant when the A/C system is low on refrigerant. This mode is most often used when the A/C system is working but does not produce sufficiently cold air.

MODE 3 Operational Steps

1. Refer to the Pre-Operation Check List.
2. Connect the high and low side auto service hoses to the respective high and low side service ports on the automobile A/C system. Open the service hose valves.

NOTE: If desired, the gauges of the Model 700/800 can now be used to aid investigation of an A/C system problem. Ensure the automobile A/C system is turned off prior to selecting a mode on the Model 700/800.

3. Verify the automobile air conditioning system is

off.

4. Press MODE 3 for Charge Only.
5. When the LCD reads **“Set Charge Amount,”** set the amount of refrigerant to be charged into the A/C system by pressing and holding INCREASE or DECREASE until the desired amount is shown. Release the button and press ENTER to accept the charge amount shown on the LCD.
6. The LCD should read **“Push Start.”**
7. Press START to begin charging operations. The Model 700 & 800 will start the charge cycle.

During the charge process, liquid refrigerant is drawn from the storage tank, vaporized in the Model 700/800, and charged into the high side of the automobile A/C system. The LCD will display the progress of the charging process. When the desired charge amount has been transferred to the A/C sys-

tem, the unit will beep.

8. Verify the message on the LCD reads **“Chrg Only Complete.”**
9. Shut the service valves and disconnect the high and low side auto service hoses from the automobile.
10. Press the RESET button to return to the **“Select Mode”** status.

Error Messages in Charge Mode

If an error condition arises in Charge Only, the unit will slowly beep and the LCD will display one of the following messages:

“ERR-Tank Empty” - This message appears when the storage has less than six (6) pounds of refrigerant remaining. Press ENTER when the LCD reads **“Select Mode”** to see the total tank weight. Add refrigerant to the tank using the steps outlined in MODE 6, Refill Tank.

“ERR-Hi Pressure” - This message indicates a high pressure condition in the system. During charging operations, this will most likely occur because the valve on the high side auto service hose is shut or the schrader core in the auto service port is not fully de-

pressed. See the troubleshooting chart for more details.

“Time Limit” - During charging operations, the system is designed to shut down after the automobile A/C system has been charged and the Model 700 & 800 has been pulled into a proper vacuum. If a condition prevents the system from completing the charge within a set time limit, the Model 700 & 800 will indicate an error. The most common cause of this error is a closed liquid tank valve which prevents the unit from drawing out any refrigerant. The time is set at the factory to ten (10) minutes and may be changed in the unit's Utility Mode.

“ERR - Accumulator Hi Pressure” - This error indicates an internal restriction or defective high pressure switch. It is most commonly used in diagnosing a problem with the Model 700 & 800.

“ERR - Accumulator Time Limit” - This error indicates a possible internal failure and is used in diagnosing a problem with the Model 700 & 800.

ERR - Possible Overcharge - This error occurs if the amount charged exceeds the charge setting by more than four (4) ounces. The most likely cause of this error is disturbance of the storage tank. The error could also indicate a faulty solenoid valve.

Mode 4– Full Cycle

The Full Cycle function of the Model 700 & 800 is designed to remove and recycle all refrigerant in an A/C system by transferring the refrigerant to the storage tank, remove moisture in the system by pulling a vacuum, and charging the system with a precise amount of refrigerant. This mode is most often used to tune up the A/C system prior to the start of the cooling season. It will ensure the system has no moisture and the refrigerant charge is correct.

MODE 4 Operational Steps

1. Refer to the Pre-Operation Check List.
2. Connect the high and low side auto service hoses to the respective high and low side service ports on the automobile A/C system. Open the service hose valves.

NOTE: If desired, the gauges of the Model 700 & 800 can now be used to aid investigation of an A/C system problem. Ensure the automobile A/C system is turned off prior to selecting a mode on the Model 700 & 800.

3. Verify the automobile air conditioning system is off.

4. Press MODE 4 for Full Cycle.
5. When the LCD reads **“Set Vacuum Time,”** set the vacuum time by pressing and holding INCREASE or DECREASE until the desired time is shown. Release the button and press ENTER to accept the vacuum time shown on the LCD. **Vacuum time can be bypassed if the time is set to zero.**
6. When the LCD reads **“Set Vac Hold Time,”** set the vacuum hold time by pressing and holding INCREASE or DECREASE until the desired time is shown. Release the button and press ENTER to accept the vacuum hold time shown on the LCD. **Vacuum hold time can be bypassed if the time is set to zero.**
7. When the LCD reads **“Set Charge Amount,”** set the amount of refrigerant to be charged into the A/C system by pressing and holding INCREASE or DECREASE until the desired amount is shown. Release the button and press ENTER to accept the charge amount shown on the LCD.
8. The LCD should read **“Push Start.”**

9. Press START to begin full cycle operations.
10. The Model 700 & 800 will begin to recovery and then evacuate the A/C system and will beep to indicate the end of the vacuum time, if Vacuum Hold is used.
11. Record the vacuum level shown on the low pressure gauge and press START to begin the vacuum hold time. The hold time will count down on the LCD and the unit will beep at the end of the hold time. If vacuum hold time was set to zero, the unit will transition into charge mode.
12. Record the final vacuum level shown on the low pressure gauge. If the two recorded vacuum levels are different, the A/C system may have a leak and may not retain refrigerant when charged. The Model 700 & 800 will automatically start the charge cycle.

During the charge process, liquid refrigerant is drawn from the storage tank, vaporized in the Model MR3 & MR5, and charged into the high side of the automobile A/C system. The LCD will display the progress of the charging process. When the desired charge amount has been transferred to the A/C system, the unit will beep.

13. Verify the message on the LCD reads **"Full Cycle Complete."**
14. Press the RESET button. The LCD should read **"Check Oil Levels."**
15. Shut the service valves and disconnect the high and low side auto service hoses from the automobile.
16. Measure the oil in the oil drain bottle. Dispose of recovered oil in a proper manner.
17. Use the high pressure oil pump and hose to add new oil back into the automobile A/C low side port in accordance with the automobile manufacturer's recommendations. Add an amount of new oil equal to the amount collected in the oil drain bottle. Each full stroke of the oil pump will add ½ ounce of oil.
18. Press the RESET button to return to the **"Select Mode"** status.

Error Messages in Full Cycle Mode

If an error condition, the unit will slowly beep and the LCD will display one of the following messages:

"ERR-Tank Full" - This message appears when the

storage tank becomes 80% full. This occurs when the total tank weight exceeds 75 pounds. Press the ENTER button when the LCD reads **"Select Mode"** to see the total tank weight.

"ERR-Tank Empty" - This message appears when the storage tank has less than six (6) pounds of refrigerant remaining. Press ENTER when the LCD reads **"Select Mode"** to see the total tank weight. Add refrigerant to the tank using the steps outlined in MODE 6, Refill Tank.

"ERR-Hi Pressure" - This message indicates a high pressure condition in the system. During charging operations, this will most likely occur because the valve on the high side auto service hose is shut or the schrader core in the auto service port is not fully depressed. See the troubleshooting chart for more details.

"Time Limit" - During charging operations, the system is designed to shut down after the automobile A/C system has been charged and the Model 700 & 800 has been pulled into a vacuum. If a condition prevents the system from completing the charge within a set time limit, the Model 700 & 800 will indicate an error. The most common cause of this error is a closed liquid tank valve which prevents the unit from drawing out any refrigerant. The time is set at the factory to ten (10) minutes and may be changed in the unit's Utility Mode.

"ERR - Accumulator Hi Pressure" - This error indicates an internal restriction or defective high pressure switch. It is most commonly used in diagnosing a problem with the Model 700 & 800.

"ERR - Accumulator Time Limit" - This error indicates a possible internal failure and is used in diagnosing a problem with the Model 700 & 800

ERR - Possible Overcharge" - This error occurs if the tank weight changes more than eight (8) ounces during the self-evacuation process. Once the charge amount has been removed from the storage tank, a solenoid valve stops flow from the tank. The Model 700 & 800 continues operating until the unit is in a vacuum. This ensures the A/C

system receives all the refrigerant removed from the tank. During this phase of operations, the tank weight should not change substantially. The most likely cause of this error is disturbance of the storage tank. The error could also indicate a faulty solenoid valve.

Mode 5– Oil Flush

The Oil Flush mode is designed to remove oil from an automobile A/C system so new oil can be added. In this mode refrigerant is circulated through the A/C system and the Model 700 & 800. An oil separator in Model 700 & 800 removes the oil and returns oil-free refrigerant back into the A/C system. At the end of the cycle, the refrigerant is completely removed from the A/C system. The Oil Flush mode is not designed to flush dirt or debris from the A/C system. This mode can take up to 1 ½ hours to complete.

Because of the variety of A/C system configurations currently in service, the flush may bypass certain sections of the A/C system. To ensure the complete system is flushed, you may need to "pinch off" certain hoses to force the refrigerant flush throughout the system.

MODE 5 Operational Steps

1. Refer to the Pre-Operation Check List.
2. Connect the high and low side auto service hoses to the respective high and low side service ports on the automobile A/C system. Open the service hose valves.
3. Press MODE 5 for Oil Flush
4. When the LCD reads **"Set Flush Amount,"** set the flush amount by pressing and holding INCREASE or DECREASE until the desired amount is shown. Release the button and press ENTER to accept the flush amount shown on the LCD. Testing has shown the ideal flush amount is three (3) times the normal charge amount. For instance, if the correct charge amount for the A/C system being serviced is two (2) pounds, the ideal flush amount is four (4) pounds.
5. When the LCD reads **"Set Flush Time,"** set the flush time by pressing and holding INCREASE or DECREASE until the desired time is shown. Release the button and press ENTER to accept the flush time shown on the LCD. A minimum flush time of thirty (30) minutes is recommended.
6. The LCD should read **"Push Start."**
7. Press START to begin flushing operations. The Model 700 & 800 will recover any refrigerant in

the A/C system and charge the system with the selected flush amount of refrigerant. The refrigerant will circulate throughout the A/C system and the Model 700 & 800. The unit's oil separator will remove the oil from the refrigerant and return the clean refrigerant to the A/C system. At the end of the cycle, all refrigerant and oil will be recovered from the automobile system.

8. The unit will beep to indicate the cycle is complete and the LCD will read **"Flush Cycle Complete."**

CAUTION! The automobile A/C system now has no refrigerant and may not have enough oil. Ensure the correct amount of oil is added when the system is charged with refrigerant. Use the high pressure oil pump and hose to add an amount of new oil equal to the amount collected in the oil drain bottle.

Error Messages in Flush Mode

If an error condition arises in Flush mode, the unit will slowly beep and the LCD will display one of the following messages:

"ERR-Tank Empty" - This message appears when the storage tank has less than six (6) pounds of refrigerant remaining. Press ENTER when the LCD reads **"Select Mode"** to see the total tank weight. Add refrigerant to the tank using the steps outlined in MODE 6, Refill Tank.

"Time Limit" - During flushing operations, the system is designed to shut down after the automobile A/C system has been flushed and the Model 700 & 800 has recovered the flushing charge. If a condition prevents the system from completing the flush within a set time limit, the Model 700 & 800 will indicate an error. The most common cause of this error is a closed liquid tank valve which prevents the unit from drawing out any refrigerant. The time is set at the factory to thirty (30) minutes and may be changed in the unit's Utility Mode.

"ERR-Hi Pressure" - This message indicates a high pressure condition in the system. During flushing operations, this will most likely occur because the valve on the high side auto service hose is shut or the schrader core in the auto service port is not fully depressed. See the troubleshooting chart for more details.

Mode 6– Tank Refill

In order to use the charging and flushing modes, you must have at least six (6) pounds of refrigerant in the storage tank. Follow this procedure to add refrigerant to the storage tank. When adding R-134a to the tank of either a Model 700 or 800, you will need to use the tank refill adapter supplied in the accessory kit. This adapter connects the low side auto service coupling to the tank of new R-134a refrigerant. It should be stored in the tool box on the back of the unit.

1. Refer to the Pre-Operation Check List.
2. Connect the blue low side auto service hose to the new refrigerant source tank and open the tank valve. Turn the source tank upside down to ensure all of the refrigerant is transferred to the

storage tank on the unit.

3. Select MODE 6 Tank Refill.
4. Press the START button. Refrigerant will transfer to the storage tank. The unit will shut off automatically when either the supply tank is empty or the storage tank is full.

To determine the combined weight of the storage tank and refrigerant or the weight of the refrigerant alone, press the ENTER button anytime the display reads “**Select Mode.**” Pressing the ENTER button will toggle the weight between the total weight and the refrigerant weight. The lighter weight is the refrigerant-only. The tare or empty weight of the tank is approximately thirty (30) pounds. Press the RESET key to return to the “**Select Mode**” status.

Mode 7– Refrigerant Management System

The Refrigerant Management System built into the Model 700 & 800 tracks all aspects of refrigeration usage. The information can significantly help you manage your automobile A/C repair business. In addition, new federal regulation require strict records of your refrigerant usage. The software in this system is designed to ensure the highest possible accuracy in managing refrigerant usage. Refrigerant measurement during charging is extremely accurate. In recovery mode, however, accuracy is plus or minus three ounces based on variations in air temperature and pressure.

Uses of the refrigerant data include:

- Improved record keeping
- Accurate determination of net profits for your business
- Reduced billing errors
- Minimized refrigerant loss from leaks and theft
- Reduced operator errors

The refrigerant management information is stored in

nine registers. To access the information, press Mode 7, REFRIGERANT MANAGEMENT SYSTEM. Press INCREASE or DECREASE to cycle through the registers. The registers are:

Register 1: Total number of jobs to date.

Register 2: Cumulative run time in minutes.

Register 3: Refrigerant recovered during last job.

Register 4: Refrigerant charged in last job.

Register 5: Run time of last job.

Register 6: Total amount of refrigerant recovered to date.

Register 7: Total amount of refrigerant charged to date.

Register 8: Total of all new refrigerant added to the storage tank to date.

Register 9: Send data to the optional printer. Press ENTER to print the refrigerant management data.

Filter Maintenance

The Model 700 & 800 has a unique filter system which ensures the refrigerant transferred to the storage cylinder is clean and moisture-free. The filters must be changed periodically to ensure the system is working properly. A moisture indicator below the filters indicates when filter maintenance is needed. If the indicator turns magenta, maintenance will be needed soon. If the indicator turns red or orange, the filter maintenance should be performed as soon as possible.

All refrigerant must be removed from the old filters before they are removed. Follow the filter change procedures carefully to minimize refrigerant loss and ensure only clean, moisture-free refrigerant is transferred into the storage cylinder. For economy, you may choose to rotate filters rather than replace both of them. Step 12 explains the rotation process. Replace both filters if the moisture sight glass is red or orange prior to changing the filters. **Filter Change Steps**

1. Turn off the Main Power.
 2. Press and hold the DECREASE button and turn on the power. This starts the unit in a special Filter Change Mode.
 3. The LCD will display **“Close Liquid Valve on Tank, Push Start.”**
 4. Close the liquid valve on the storage cylinder. Normally this valve has a red handle.
 5. Press START and the LCD will display **“Connect high side service hose.”**
 6. Connect the red, high side auto service hose to the service port located on the “T” fitting connected to the tank vapor port. This port may have a brass or red plastic cap which must be removed before attaching the service hose. **Do not disconnect the short hose from the tank!**
 7. Press START to begin filter evacuation. The LCD will display **“Please Wait - Evacuating Filters.”**
- The unit will completely evacuate all refrigerant from the two filters and the internal components of the unit. The red service hose will be the only component containing refrigerant when the cycle is complete. The outside of the filters will develop frost during evacuation. This is normal and indicates liquid refrigerant is being removed from the filters. This operation takes about twenty (20) minutes.
8. When the cycle is complete, the unit will beep and the LCD will display **“Evacuation Complete.”**
 9. Remove the moisture sight glass assembly by loosening the fitting on the bottom of each filter. You will need a backup wrench on the filter fitting.
 10. Make note of the flow direction arrows on the old filters.
 11. Loosen the filter bracket. Remove the filters and discard them. Rather than replace both filters, you may want to rotate filters by moving the right filter in place of the left filter and installing a new filter on the right side.
 12. Replace with new filters ensuring the flow direction arrow is the same as it was on the old filters.
 13. Replace the moisture sight glass assembly. Check all fittings for leaks to ensure no refrigerant is lost during subsequent system operation.
 14. Remove the red high side auto service hose from the “T” fitting and replace the service port cap. Open the liquid valve on the storage tank.

The Model 700 & 800 is ready for operation.

Purging Non-Condensable Gases

The Model 700 & 800 is designed to purge automatically non-condensable gases such as air present in the storage tank. When the pressure in the tank exceeds a threshold value, the unit will automatically purge the excess pressure. The unit will only purge when it is first turned on. The current purge status is always displayed in the upper right corner of the LCD.

The purge status in the LCD should either be “Y”, “N”, or “E.” A “Y” indicates air is present in the tank. The unit will purge next time it is turned off and on.

An “N” in the windows indicates a purge is not needed.

An “E” will display on the LCD if the previous purge was insufficient to lower the non-condensable gas value below the limit. The purge time is set to 30 seconds to minimize refrigerant loss. If the LCD continues to display an “E” after several purge cycles, there may be an error in the system. Check the pressure in the tank to determine if the system is purging unnecessarily.

To check the tank pressure, let the unit sit undisturbed for at least three hours. Connect the high side service hose to the auxiliary port on the storage tank. Read the value on the high pressure gauge. The reading should be close to those in the following table.

Approximate Pressure (psig)

Temp (°F)	R-12	R-134a	Temp (°F)	R-12	R-134a
65	74	74	90	110	120
70	80	81	95	118	126
75	87	88	100	127	135
80	96	97	105	136	145
85	102	115	110	146	155

If the unit continues to display “Y” or an “E” and the tank pressure is near the value in the table below, contact technical services at 1-800-769-8370.

Troubleshooting Information

The Model 700 & 800 has a number of sophisticated features which makes it by far the most user friendly A/C service system in the world. The unit was designed to be extremely easy to operate, service and troubleshoot. Although the Model 700 & 800 was manufactured with high quality components, a component failure could cause the 700 & 800 to operate incorrectly. YELLOW JACKET® recognizes the importance of keeping your equipment operational and rapidly restore it to service when a problem occurs.

Whenever a problem occurs, please read this section. It is designed to provide you with additional information to help diagnose a system problem. Read this section thoroughly prior to calling technical services. This will reduce the time needed to restore your system to normal operation. Technical support can be reached at 1-800-769-8370.

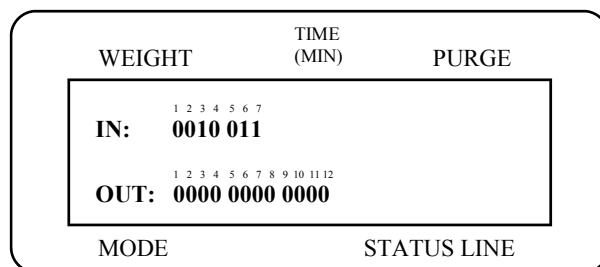
Troubleshooting Service Program

The Model 700 & 800 has a built-in troubleshooting mode that allows the technician or service person to check each individual component inside the unit. This leads to rapid isolation of the failure and quick response with procedural changes or new parts.

When the Model 700 & 800 is not operating correctly, you can enter the troubleshooting service program by following the procedures below.

1. Turn off the Main Power
2. Press and hold WEIGHT CONVERSION and turn on Main Power.
3. The LCD will display two lines of data as shown in the diagram to the left. The top line, or line 1,

shows the status of each input device in the system. The bottom line, or line 2, shows the status of each output device in the system



4. The input devices on line 1 are all normally closed devices. A “0” indicates the device is normal or closed. A “1” indicates the device is open.
5. The output devices on line 2 are all normally closed or off devices. A “0” indicates the device is normal, closed or off. A “1” indicates the device is open or on.
6. Line 1 will always show the current status of each input. The outputs on line 2 can be activated to ensure that they are working correctly. The cursor will be blinking under the first output device. Press INCREASE to move the cursor to the right. Press DECREASE to move the cursor to the left.
7. To activate outputs, press the INCREASE or DECREASE key until the cursor is under the device you would like to check. Press ENTER to activate the device. When the device is powered up, the zero turns into a one to indicate the

device is activated.

Checking Solenoid Valves

To check each solenoid valve in the Model MR3 & MR5 for proper operation, select each valve and press ENTER. The solenoid should activate and make a clicking sound. If you do not hear the click, the solenoid valve or relay may be defective. Check each solenoid valve to verify operation.

Checking the Fan and the Compressor

To verify the fan, compressor, and auxiliary power outlet are working, follow the procedure previously discussed. Verify each device activates.

As a safety feature, the compressor will not operate

when the high pressure switch is on, indicating a high pressure condition in the unit. The condition must be cleared for the compressor to operate normally.

To gain access to the internal components of the Model 700 & 800, remove the screws around the base of the cowl and carefully pull the cowl straight up. Use caution when sliding the top past the gauges as the tolerance is very tight and the lenses could be damaged.

Additional Information

If you are not able to resolve your difficulty with the Model MR3 & MR5, contact Technical Services at 1-800-769-8370.

Input Devices	Output Devices
1 Selection (R-12 is zero/R-134a is one)	1 SV1 Solenoid - High side valve
2 Purge Switch (0=No Purge, 1=Purge Needed)	2 SV2 Solenoid - High/low side compressor inlet valve
3 Not Currently Used	3 SV3 Solenoid - Recovery Discharge Valve
4 High Pressure Switch	4 SV4 Solenoid - External Vacuum Pump
5 Low Pressure Switch	5 SV5 Solenoid - Inlet Charging Valve
6 Not Currently Used	6 SV6 Solenoid - Outlet Charging Valve
7 Not Currently Used	7 SV7 Solenoid - Purging Valve
	8 SV8 Solenoid - Migration/Flush Valve
	9 SV9 Solenoid - Oil Drain Valve
	10 FAN Power
	11 Compressor Power
	12 External Power Outlet

Common Problems and Potential Solution

Problem	Possible Causes	Possible Solutions
Model 700 & 800 cannot pull automobile A/C system into a vacuum	<ul style="list-style-type: none"> • Service valves on hoses not properly installed on A/C system. • Service ball valve seals are worn. • Hoses on unit are loose or leak. • Automobile A/C system has a leak. 	<ul style="list-style-type: none"> • Check valve seals and threads and replace if needed. • Replace valve seals and schrader core depressor. • Tighten or replace hoses on unit. • Find and repair leak in A/C system.
High side gauge readings above normal	<ul style="list-style-type: none"> • Restriction in A/C system or schrader core. • Service hose ball valve closed. • Incorrect charge amount entered in unit. 	<ul style="list-style-type: none"> • Check hose connection and fix restriction. Replace schrader core. • Open valve. • Recover, check scale calibration, and recharge system.
Refrigerant not being transferred during Tank Refill.	<ul style="list-style-type: none"> • Valve on supply tank closed. • Ball valve on blue service hose closed or hose is constricted. • Wrong hose installed on new refrigerant tank. • Storage tank is full. 	<ul style="list-style-type: none"> • Open Valve. • Open valve or straighten hose. • Install blue service hose on refrigerant tank. • Close valve on new supply. Disconnect service hose.
Touch Pad will not accept commands	<ul style="list-style-type: none"> • Button on touch pad is stuck. • Bad Touch Pad. • Wire disconnected between touch pad and microprocessor. • Microprocessor malfunction. 	<ul style="list-style-type: none"> • Feel for non-responsive button. If not responding, call Technical Services. • Call Technical Services. • Call Technical Services. • Call Technical Services.
Fan not running in any cycle	<ul style="list-style-type: none"> • Loose power wire to fan. • Microprocessor malfunction. • Fan malfunction. 	<ul style="list-style-type: none"> • Locate loose fitting and reconnect. • Call Technical Services. • Call Technical Services.
Machine will not turn on	<ul style="list-style-type: none"> • Power cord is not plugged into a 120 Volt outlet. • Circuit breaker tripped on shop power panel. • Bad Main Power switch. • Loose wire. • Bad Transformer on microprocessor 	<ul style="list-style-type: none"> • Plug into outlet. • Reset circuit breaker. If circuit breaker immediately trips, do not reset. Consult a qualified electrician. • Call Technical Services. • Repair loose wire. • Call Technical Services.
Unit will not recover refrigerant from A/C system	<ul style="list-style-type: none"> • Valves on service hoses shut. • Service hose is constricted. • Compressor not operating. 	<ul style="list-style-type: none"> • Open valves. • Straighten hose. • Call Technical Services.
Unit will not charge refrigerant into vehicle	<ul style="list-style-type: none"> ? Valves on service hoses shut ? Service hose is constricted ? Unit storage tank valve is closed ? Compressor not operating 	<ul style="list-style-type: none"> ! Open valves ! Straighten hose ! Open tank valves ! Call Technical Services
Refrigerant leaking during charge operations	<ul style="list-style-type: none"> ? Service valves on hoses not properly installed on A/C system. ? Service ball valve seals are worn. ? Hoses on unit are loose or leak. ? Automobile A/C system has a leak 	<ul style="list-style-type: none"> ! Check valve seals and threads and replace if needed. ! Replace valve seals and schrader core depressor ! Tighten or replace hoses on unit ! Find leak in A/C system and repair.

LCD Error Messages and Potential Solution

Error	Possible Causes	Possible Solutions
Hi Pressure Limit	<ul style="list-style-type: none"> Service valves on hoses closed. Schrader core on A/C system not depressing 	<ul style="list-style-type: none"> Open valves Replace schrader core
Tank Empty	<ul style="list-style-type: none"> No refrigerant in storage tank Tank not properly on scale Scale cord not properly connected Scale is out of calibration 	<ul style="list-style-type: none"> Refill storage tank using Mode 6, Tank Refill Reposition scale Check scale cord connection Re-calibrate scale using Utility Mode
Supply Tank Empty	<ul style="list-style-type: none"> Tank of new refrigerant is empty 	<ul style="list-style-type: none"> Close supply tank valve and disconnect hoses. If tank is not empty, see "Refrigerant
Tank Full	<ul style="list-style-type: none"> Tank is 80% full Scale is out of calibration Tank not properly on scale 	<ul style="list-style-type: none"> Charge some refrigerant or transfer to another Re-calibrate scale using Utility Mode Reposition tank
Time Limit (during charging cycles)	<ul style="list-style-type: none"> Tank on unit is closed Default time limit is too short Compressor not running Tank or scale misaligned 	<ul style="list-style-type: none"> Open tank valve Use default time of 10 minutes unless A/C Call Technical Services Reposition tank and scale
Time Limit (during recovery)	<ul style="list-style-type: none"> A/C system has a leak Valves on service hoses shut Service hose is constricted Unit storage tank valve is closed Compressor not operating 	<ul style="list-style-type: none"> Locate and repair leak Open valves Straighten hose Open tank valves Call Technical Services
No Scale	<ul style="list-style-type: none"> Scale cord not connected Scale cord damaged Microprocessor malfunction 	<ul style="list-style-type: none"> Properly connect cord Call Technical Services Call Technical Services
No Tank	<ul style="list-style-type: none"> Tank is not on scale Scale out of calibration 	<ul style="list-style-type: none"> Place tank on scale Calibrate scale using Utility Mode
Possible Overcharge	<ul style="list-style-type: none"> Tank was disturbed during charging cycle Internal failure of unit 	<ul style="list-style-type: none"> Re-start Full Cycle Call Technical Services
Accum Time Limit	<ul style="list-style-type: none"> Internal failure of unit 	<ul style="list-style-type: none"> Call Technical Services
Accum Hi Pressure	<ul style="list-style-type: none"> Internal failure of unit 	<ul style="list-style-type: none"> Call Technical Services
Purge "Y"	<ul style="list-style-type: none"> Non-condensable gases are present in 	<ul style="list-style-type: none"> Turn unit off and on to start purge cycle
Purge "N"	<ul style="list-style-type: none"> Non-condensable gases are NOT present 	<ul style="list-style-type: none"> Normal condition
Purge "E"	<ul style="list-style-type: none"> Time limit was reached before purge cycle was complete. 	<ul style="list-style-type: none"> Turn unit off and on to start purge cycle. If "E" remains after three on-off cycles, contact

Model 700 & 800 Repair Parts List

<u>Part #</u>	<u>Description</u>	<u>Part #</u>	<u>Description</u>
95173	High Pressure Switch	27296	R-134a Auto Low Side Blue Hose (8ft)
38023	Vacuum Switch	27696	R-134a Auto High Side Red Hose (8ft)
95190	Capacitor	00849	R-134a Tank Vapor Blue Hose (30in)
95187	Relay	00853	R-134a Tank Liquid Red Hose (30in)
38026	Differential Switch	19153	R-134a Tank Refill Adapter
38009	Membrane Touch Pad	95006	50lb Refrigerant Tank
38007	Microprocessor	38003	Filter-Dryer (2 per unit)
95157	Circuit Breaker, 15 Amp	38019	Oil Bottle
38028	Oil Separator/Accumulator	95257	6" Fan Motor Assembly
00845	R-12 Auto Low Side Blue Hose (8ft)	95153	Oil-less Compressor
00851	R-12 Auto High Side Red Hose (8ft)	38004	Load Cell
00730	R-12 Tank Liquid Red Hose (30in)	77950	Oil Pump Assembly
00603	R-12 Tank Vapor Blue Hose (30in)	38033	Moisture Sight Glass Service Kit

Warranty Information

LIMITED WARRANTY

We guarantee Ritchie YELLOW JACKET® products to be free of defective material and workmanship which would affect the life of the product under normal use for the purpose for which it was designed.

This warranty does not cover items that have been altered, abused, misused, improperly maintained, or returned solely in need of field service maintenance. This warranty expressly excludes Vacuum Pump damage and failures caused by failure to maintain clean, uncontaminated oil in the pump – the major reason for pump returns. Therefore, problems related to non-maintained oil will void this warranty on that part of the product.

This warranty does not cover abuse, damage from over tightening valves, or broken gauges. "Series 41" Manifold valves can be reconditioned using replacement seating cylinder 41133. There will be a reconditioning charge for manifolds returned to the factory for repair.

If found defective, we will upon compliance with the return instructions either credit, replace, or repair, at our option, the defective product provided it is returned within one year of the date of factory shipment (90 days for tubing tools). Note: Hoses are Date Coded to help determine age of hose. See recommended hose safety inspection procedure. Leak Detectors have date of manufacture label on product.

Correction in the manner provided above shall constitute a fulfillment of all liabilities with respect to the quality, material and workmanship of the product.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OF QUALITY, WHETHER WRITTEN, ORAL OR IMPLIED.

Returns (Warranty)

For HVAC&R Recovery Units and for Automotive Recovery, Recycle, Recharge equipment, call 1-800-769-8370 for instructions for service, repair, or return. Our automatic series (Models 39870, 39750, 39751, 39770, 39771, 39830, 39832, 39833, 39840, 39841, 39842, 39843) has a two year full parts and labor warranty, the semi- automatics (Models 39710, 39711, 39730, 39731, 39732, and 39733) and hand held machines (Models 39702 and 39704) have a full one years parts and labor warranty. For all other products, please return warranty items to the main factory in Bloomington, MN, prepaid for credit, replacement, or repair, at our option. No authorization is required. All returns must be PREPAID. On direct drive pumps, many of the problems can be solved over the telephone. Call 952-943-1333.

Returns (Non-Warranty)

Prior authorization must be obtained from home office for non-warranty returns. All returns must be PREPAID. Minimum restocking charge 20% on standard items of current date coding and manufacture. Special production items will have a higher restocking charge. Many items shown in our price list are custom-fabricated to customer's order.

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